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Microstructure, strength and fatigue of an ultrafine-grained Al-Cu-Mg alloy

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Abstract

© 2015, Institute of Problems of Mechanical Engineering. The impact of equal-channel angular pressing (ECAP) on the microstructure of an Al-Cu-Mg alloy has been investigated using transmission electron microscopy and electron backscatter diffraction. A combination of an ultrafine-grained and bimodal structure was observed in the alloy as a result of ECAP processing. The ECAP-processed samples after tensile tests and cyclic loads have demonstrated an enhanced ultimate tensile strength and fatigue endurance limit in comparison with the properties of the samples subjected to the standard T6 treatment.